GRADE 12 UNIVERSITY BIOLOGY:

BIOCHEMISTRY UNIT OVERVIEW

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| **Hour** | **Lesson Title and Topic** | **Expectation Codes** | **Learning Strategy and Assessment** | **Evaluation including criteria addressed from Achievement Chart** |
| 1 | Introduction | NA | Discuss definition of Biochemistry, what they know about biochemistry, and have students do diagnostic test. Watch video “Cellular Visions” introducing biochemistry and cellular processes: <http://www.studiodaily.com/> | Diagnostic: testing prior K/U.  Marks not recorded. |
| 2 | Organelles and Cellular Processes | B2.1, B3.1 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 3 | Organelles and Cellular Processes | B2.1, B3.1 | Gizmos Lab: Explore the Cell Structure Gizmo at [www.explorelearning.com](http://www.explorelearning.com). Students complete the student exploration sheets.  Book computer lab. | Student exploration sheets handed in at end of period and marked K/U |
| 4 | Structure and Function of Biochemical Compounds: Carbohydrates | B2.1, B3.2 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts.  Take up any homework, along with quick quiz review. | Assess students’ understanding based on answers provided orally in class marks not recorded. K/U |
| 5 | Quiz | B2.1, B3.1 | Write quiz; question and answer/work period | K/U, T Marks recorded |
| 6 | Structure and Function of Biochemical Compounds: Lipids | B2.1,B3.2 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 7 | Structure and Function of Biochemical Compounds: Proteins and Nucleic Acids | B2.1, B 2.3, B3.2 | Lecture via PowerPoint presentation and discussion. Introduce assignment: Students will work in pairs. They must pick a biochemical compound and create a scientifically accurate 3D representation (Ex. The nucleic acid, DNA; the lipid, cholesterol), with a brief paragraph about the molecule. | Assignment (3D Model) to be handed in within a 1.5 weeks (say class 18). Marked for C and A. |
| 8 | Common Functional Groups | B2.1, B3.3 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 9 | Common Functional Groups | B2.1, B3.3 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. Take up any homework, along with quick quiz review. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 10 | Quiz | B2.1, B3.2, B3.3 | Write quiz; question and answer/work period | K/U, T marks recorded. |
| 11 | Enzymes | B2.1, B3.4 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 12 | Enzymes: Lab | B1.1, B2.1, B2.5, B3.4 | Lab on Enzyme Kinetics (i.e. factors that affect enzyme activity). Students must complete proper lab write-up, including a discussion on technological applications of biochemistry in the food and pharmaceutical industries. | Lab to be handed in during class 16. Marked for T, C, and A |
| 13 | Biochemical Reactions | B2.1, B3.5 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 14 | Biochemical Reactions | B2.1, B3.5 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. Take up any homework, along with quick quiz review. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 15 | Quiz | B2.1, B3.4, B3.5 | Write quiz; questions and answer/work period | K/U, T Marks recorded. |
| 16 | Cell Membrane, Fluid Mosaic Model | B2.1 B3.6 | Lecture via PowerPoint presentation and discussion. Assign homework either from text or handouts. | Assess students’ understanding based on answers provided orally in class. Marks not recorded. K/U |
| 17 | Cell Membrane, Fluid Mosaic Model | B2.1, B2.2, B3.6 | Gizmos Lab: Explore the Diffusion and Osmosis Gizmos at [www.explorelearning.com](http://www.explorelearning.com). Students complete the student exploration sheet in pairs.  Book computer lab. | Student exploration sheet handed in at end of period and marked K/U, T, C |
| 18 | In-Class Culminating Task: Group Work | B1.2, B2.1 | Read a recent research article based on advances in biochemistry, summarize and answer questions. Students work in groups of three or four. | Summaries and questions to be handed in and marked.  T, C and A |
| 19 | Conclusion and Review | B2.1 | Rewatch video “Cellular Visions” and discuss how much more students know about the video. Take student questions before the test. | NA |
| 20 | Unit Test | ALL | Students complete unit test. | K/U, T, C, A |